

(No Model.)

E. M. JOHNSON.  
PROJECTILE.

No. 581,211.

Patented Apr. 20, 1897.

Fig. 1-

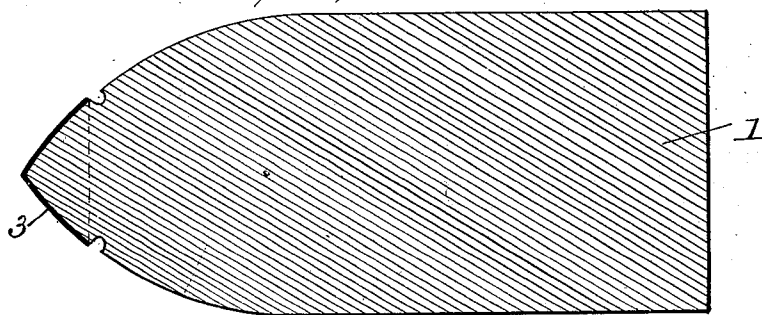
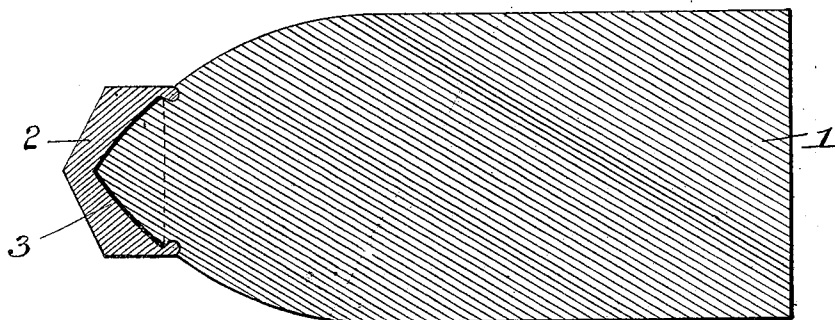


Fig. 2-



Witnesses:  
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# UNITED STATES PATENT OFFICE.

ELIAS M. JOHNSON, OF NEW YORK, N. Y.

## PROJECTILE.

SPECIFICATION forming part of Letters Patent No. 581,211, dated April 20, 1897.

Application filed December 31, 1896. Serial No. 617,643. (No model.)

*To all whom it may concern:*

Be it known that I, ELIAS M. JOHNSON, a citizen of the United States, and a resident of New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Projectiles; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to that class of armor-piercing projectiles having a hardened conoidal point and a soft-metal cap attached to and surrounding said point; and its object is to provide the projectile and cap with a lubricating compound or substance whereby the efficiency of the projectile is increased.

The invention consists, essentially, in a projectile having a hard conoidal point, a soft-metal cap fitting thereon and secured thereto, and a layer of lubricating material interposed between the point of the projectile and the cap and surrounding said point, as hereinafter fully described and claimed.

In the accompanying drawings, Figure 1 is a sectional elevation of a projectile with the soft-metal cap removed, showing a layer of graphite or other lubricating material on the point thereof. Fig. 2 is a longitudinal sectional view of the projectile complete.

In the said drawings the reference-numeral 1 designates a projectile such as is commonly used with rifled ordnance, and 2 a cap of soft tough metal. The numeral 3 designates a layer of graphite interposed between the point of the projectile and the soft-metal cap. The inner end of the cap is provided with an interior rib or flange which engages with a corresponding groove in the projectile for holding the cap in place. The graphite is preferably applied in a pasty or plastic condition which subsequently dries and hardens.

As before stated, the projectile is principally designed for piercing armor-plates, and when the cap which strikes the plate first comes in contact therewith it will spread over the point of the projectile, which will pass therethrough. It will thus be seen that the force or concussion caused by the impact will

be taken up by the cap, protecting the conoidal point and preventing it from being broken, so that it will pierce the plate. When the cap thus strikes the plate, the forward motion of the projectile will condense the graphite, and in passing through the cap the friction will be reduced by the lubricating material. The point of the projectile is thus entirely lubricated and a portion of the lubricating material will be carried into the armor-plate, which will reduce the friction of the projectile in penetrating the plate.

As seen, the cap is made in a cylindro-conoidal form, so as to entirely surround the point of the projectile, the line of juncture between the conoidal and cylindrical portions being in rear of the point of the projectile, thereby giving resistance to lateral deflection or longitudinal strain.

I am aware that projectiles with a thin lubricant-retaining cap thereon have heretofore been made, and projectiles made by me and constructed in the same way have been experimentally tried, but unsuccessfully, as in such constructions, owing to non-support, they would not allow the lubricant to exercise its qualities.

In the construction set forth in this application, on the contrary, the cap is so constructed, as before described, as to entirely surround the point, thus giving resistance to lateral deflection or longitudinal strains of compression, and thus preventing either upsetting or breaking of the point, and consequently by allowing the full qualities of the lubricant to be exerted a far greater degree of efficiency is attained than ever heretofore.

It will be seen from the above that my invention does not consist merely in inserting a lubricant between a projectile and a cap, but does consist in the combined use of a lubricant and a point-supporting cap, as above set forth, a most useful combination never heretofore brought about.

Having thus fully described my invention, what I claim is—

1. A projectile having a hard conoidal point, a soft-metal supporting-cap having a correspondingly-formed recess, secured to said point, and a lubricant interposed between said point and cap, substantially as described.
2. A projectile having a hard conoidal point,

a soft-metal cap secured thereto, having a corresponding recess and fitting over said point, and a layer of graphite interposed between said point and cap and surrounding the point, substantially as described.

3. In an armor-piercing projectile, the combination of the pointed projectile, a thick supporting-cap entirely surrounding said point, and a lubricant interposed between the cap and projectile, substantially as described.

4. The combination with an armor-piercing

projectile having a hardened point, and a lubricant thereon, of the thick supporting-cap, entirely surrounding said point and covering said lubricant, substantially as described.

In testimony that I claim the foregoing as my own I have hereunto affixed my signature in presence of two witnesses.

ELIAS M. JOHNSON.

Witnesses:

ALBERT BABCOCK,

RICHARD B. COMSTOCK.